

**REMARKS**

Claims 19-38 are pending. Claims 20, 26 and 28 are allowed. Claims 19, 21, 29 and 35 have been amended to clarify the scope of the claims. Support for these amendments can be found throughout the specification, particularly page 10, lines 17-24. These amendments do not add any new matter.

**Rejections Under 35 U.S.C. §112, ¶1**

Claims 19, 21-25, 27 and 29-38 have been rejected for failing to comply with the written description requirement. With respect to claim 19, and the claims dependent therefrom, the Examiner states that the specification demonstrates possession of a variant nucleic acid with a G at position 3949, but does not demonstrate possession of a variant with A or C at that position, or the effect of having an A or C at that position. With respect to claims 21 and 35<sup>1</sup>, and the claims dependent therefrom, the Examiner states that the claims encompass mutants, variants and homologs of SEQ ID NO:1 which were not described in the specification. Further, the Examiner states that the claims encompass sequences that hybridize to regions of SEQ ID NO:1 that do not comprise position 3949. With respect to claim 29, and the claims dependent therefrom, the Examiner objects to the claim language “consisting of a portion of at least 10 contiguous nucleotides of SEQ ID NO:1.”

The Examiner states that the “recitation of the wild type sequence of SEQ ID NO:1 as well as the 2 mutants taught in table 2, are not representative of the large genus of mutants, variants and homologs, as well as completely unrelated sequences, of SEQ ID NO:1 encompassed by the claims.” The Examiner further alleges that “with the exception of SEQ ID NO:1 with a T or a G at position 3949, the skilled artisan cannot envision the detailed chemical structure” of the oligonucleotides encompassed by the claims.

Applicants traverse the written description rejections. To satisfy the written description requirement, the description of the invention must allow a person of skill in the art to recognize

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<sup>1</sup> The Examiner refers to claims 21 and 38. However, since claim 38 depends on claim 35, and claim 35 contains the hybridization language cited by the Examiner, Applicants believe that the Examiner meant to refer to claims 21 and 35.

that the applicant invented and was in possession of what is claimed. *See, e.g., Noelle v. Lederman*, 69 U.S.P.Q.2d 1508, 1513 (Fed. Cir. 2004). As acknowledged by the Examiner, an applicant can show possession of the claimed invention by describing the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the claimed invention.

Claim 19 is directed to an isolated nucleic acid molecule comprising all or a portion of the nucleic acid sequence of SEQ ID NO:1 comprising nucleotide position 3949, wherein the nucleotide at nucleotide position 3949 is a nucleotide other than thymidine (T). Claims 21 and 35, and the claims dependent therefrom, recite oligonucleotides that hybridize under stringent conditions to a nucleic acid molecule comprising nucleotide position 3949 of SEQ ID NO:1 wherein the nucleotide at position 3949 is a nucleotide other than T. As it is well known in the art, there are typically three nucleotides other than T: A, C and G. Therefore, the claims include nucleic acid molecules comprising: A, C or G at position 3949 of SEQ ID NO:1. It is clear that Applicants envisioned such a molecule by their statement that the nucleotide at this position must be a nucleotide other than T. Therefore, a person of skill in the art reading the specification would have understood that Applicants were in possession of the claimed invention at the time the application was filed. Accordingly, Applicants respectfully submit that the specification provides adequate description for the instant claims.

Claims 21 and 35 have been amended to require the claimed allele-specific oligonucleotide to hybridize under stringent conditions to a nucleic acid molecule comprising nucleotide position 3949 of SEQ ID NO:1. The term "stringent conditions" is supported in the specification and is well understood in the art to encompass conditions of hybridization which allow hybridization of structurally related, but not structurally dissimilar, nucleic acids. Further, the claims have been amended to clarify that the oligonucleotide must hybridize to nucleotide position 3949. Thus, claims 21 and 35, and the claims dependent therefrom, as amended, do not encompass unrelated nucleotide sequences that can hybridize to SEQ ID NO:1 as suggested by the Examiner.

With respect to claim 29, and the claims dependent therefrom, Applicants note that the claims, as amended, no longer recite the objected to language.

In view of the arguments presented above, Applicants respectfully request reconsideration and withdrawal of the written description rejections.

**Rejections Under 35 U.S.C. §112, ¶2**

Claims 29-34 have been rejected as indefinite. The Examiner states that the recitation of “consisting of a portion of at least 10 contiguous nucleotides of SEQ ID NO:1 ...” is indefinite. Applicants have amended the claims such that they no longer recite the objected to language. Accordingly, the Examiner’s rejection has been rendered moot.

**Rejections Under 35 U.S.C. §102**

*Kazuno*

Claims 21-24 are rejected under 35 U.S.C. §102(b) as being anticipated by *Kazuno et al.*, Euro. J. Cancer 35:502-506 (1999) (“*Kazuno*”). The Examiner alleges that *Kazuno* teaches primers “which are capable of hybridizing to SEQ ID NO:1 wherein the nucleotide at position 3949 is a nucleotide other than thymidine.”

Applicants respectfully traverse. Claims 21-24, as amended, recite an allele-specific oligonucleotide which hybridizes to nucleotide position 3949 of SEQ ID NO:1. The primers disclosed by *Kazuno* do not hybridize to nucleotide position 3949 of SEQ ID NO:1, as recited by amended claims 21-24. Rather, *Kazuno* teaches primers which hybridize to a different portion of SEQ ID NO:1. Accordingly, Applicants request that the Examiner withdraw this rejection.

*GenBank Accession No. AF109906*

Claims 29-34 are rejected under 35 U.S.C. §102(b) as anticipated by GenBank Accession No. AF109906. The Examiner alleges that the cited reference teaches a sequence “that contains a sequence complementary to positions 3940-3954 of SEQ ID NO:1 wherein position 3949 is a G.”

Applicants respectfully traverse this rejection. Claim 29 recites an isolated nucleic acid molecule consisting of 10 or more contiguous nucleotides of SEQ ID NO:1. The cited GenBank Accession No. does not contain a sequence consisting of 10 or more contiguous nucleotides of SEQ ID NO:1. The transitional phrase “consisting of” is closed language and excludes any element, step, or ingredient not specified in the claim. *See* MPEP § 2111.03. Therefore claim 29 excludes any nucleic acid molecule which includes a nucleotide sequence not included within SEQ ID NO:1. The cited GenBank Accession No. discloses a mouse sequence corresponding to a mouse MHC class III region RD gene which comprises 15 contiguous nucleotides of SEQ ID NO:1 as part of a larger sequence that further comprises sequences which are not present in SEQ ID NO:1. Thus, the sequence disclosed in the cited GenBank Accession No. does not meet each and every limitation of the claim and therefore does not anticipate claim 29 and the claims dependent thereon. Accordingly, Applicants request that the Examiner withdraw this rejection.

*Fodor and Brennan*

Claims 21-24, 29-30, and 35-38 are rejected under 35 U.S.C. §102(e) as anticipated by U.S. Patent No. 6,582,908 to Fodor et al. (“*Fodor*”). According to the Examiner, *Fodor* teaches an array of all possible 10mers. The Examiner concludes that the nucleic acids of the instant application read on the isolated nucleic acids of *Fodor*.

Claims 29 and 30 are rejected under 35 U.S.C. §102(e) as anticipated by U.S. Patent No. 5,474,796 to Brennan (“*Brennan*”). According to the Examiner, *Brennan* teaches an array of all possible 3mer isolated nucleic acids. The Examiner concludes that the claims of *Brennan* encompass the sequence CGC which is taught by *Brennan*.

Applicants respectfully traverse. Neither *Fodor* nor *Brennan* discloses a nucleic acid sequence that meets all of the limitations of the cited claims. Specifically, neither *Fodor* nor *Brennan* discloses an oligonucleotide which hybridizes nucleotide position 3949 of SEQ ID NO:1 (as required by claims 21 and 35), or a nucleic acid molecule comprising nucleotide position 3949 of SEQ ID NO:1 (as required by claim 29). Anticipation requires that each and every limitation of the claim is disclosed in the prior art. In this case, the prior art provides only

a general teaching of an infinite number of 10mers or 3mers containing any sequence. The specific oligonucleotides and arrays of the instant claims are not specifically disclosed or suggested by the prior art.

The disclosure of *Fodor* and *Brennan* is analogous to a prior art disclosure of a broad genus which does not anticipate or render obvious each and every member of the genus. The Manual Patent Examining Procedure (“MPEP”), section 2131.02 states: “When a compound is not specifically named, ..., anticipation can only found if the classes of substituents are sufficiently limited or well delineated.” According to the MPEP unless one is able to “at once envisage” the species from the genus, the genus does not anticipate the species. Accordingly, Applicants submit that in this case a person of skill in the art reading *Fodor* or *Brennan* would not be able to specifically envision the claimed nucleic acids. Accordingly, neither *Fodor* nor *Brennan* anticipates the claimed nucleic acids.

It is well settled that a claim to a genus does not necessarily anticipate or rendered obvious a claim directed or encompassing a particular species. *See, e.g., In re Baird*, 29 U.S.P.Q.2d 1550 (Fed. Cir. 1994) (stating that a disclosure of millions of compounds does not render obvious a claim to three specific compounds). *See also In re Belle*, 26 U.S.P.Q.2d 1529 (Fed. Cir. 1993) (holding that DNA sequence would not have been obvious in view of prior art reference suggesting a nearly infinite number of possibilities and failing to suggest why among all those possibilities one would seek the claimed sequence). Although the above mentioned cases deal with obviousness, anticipation is the epitome of obviousness (*see, e.g., Structural Rubber Products Co. v Park Rubber Co.*, 223 U.S.P.Q. 1264, 1271 (Fed. Cir. 1984)) and, therefore, a reference that does not render an invention obvious could not anticipate the invention. In view of these cases, Applicants respectfully submit that the generic disclosure in *Fodor* and *Brennan* of all 10mers and 3mers is not sufficient to anticipate the claimed nucleic acids.

Accordingly, claims 21-24, 29-30, and 35-38 are not anticipated by *Fodor* or *Brennan*. Reconsideration and withdrawal of these anticipation rejections are respectfully requested.

**Rejections Under 35 U.S.C. §103**

Claims 35-38 have been rejected under 35 U.S.C. §103 as anticipated over *Kazuno* in view of *Brennan*. According to the Examiner, *Kazuno* teaches primers which are capable of hybridizing to SEQ ID NO:1 wherein the nucleotide at position 3949 is a nucleotide other than thymidine, and *Brennan* teaches placing sequences on an array for the purposes of detecting target oligonucleotides.

Applicants respectfully traverse this rejection. In order for a combination of references to render a claimed invention obvious, the prior art references must teach or suggest all of the claim limitations. In this case, *Kazuno* and *Brennan*, either alone or in combination, do not teach all of the limitations of claims 35-38.

Claim 35 recites an array comprising an allele-specific oligonucleotide which hybridizes to nucleotide position 3949 of SEQ ID NO:1. As discussed above, *Kazuno* does not disclose a primer which hybridizes to a nucleotide position 3949 of SEQ ID NO:1 of SEQ ID NO:1. *Brennan* does not cure this deficiency. Therefore, for at least this reason, the combination of *Kazuno* and *Brennan* does not teach or suggest the invention of claims 35-38. Accordingly, Applicants respectfully request that the Examiner withdraw this rejection.

**CONCLUSION**

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call Lisa M. Treannie at (617) 951-7725 or the undersigned.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 18-1945, under Order No. WIBL-P01-575 from which the undersigned is authorized to draw.

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Respectfully submitted,

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